

CLIMATOLOGICAL DATA FOR NOVEMBER, 1912.

DISTRICT No. 4, THE LAKE REGION.

Prof. HENRY J. COX, District Editor.

GENERAL SUMMARY.

November, 1912, in the Lake Region, was unusually pleasant. Conditions were favorable for all kinds of outdoor work, and, with the exception of a few days, for the movement of lake vessels. Sunshine was considerably above the average in practically all portions of the district, relative humidity was in general somewhat lower than ordinary for November, and days with rain or snow or dense fog were comparatively infrequent. The wind movement of the month was slightly higher than the monthly normal, but heavy storms were few in number as compared with average conditions for this season of the year.

The period was in distinct contrast to November, 1911, which was described as "one of the stormiest and most disagreeable months of that name on record," with excessive cloudiness, low temperatures, general high winds, destructive local storms, and one of the severest cold waves on record for the season.

The following table summarizes the chief features of meteorological interest in the various portions of the district:

Portions of States.	Mean temperature.	Departure.	Mean daily range.	Mean precipitation.	Departure.	Greatest precipitation in 24 hours.	Mean snowfall.	With 0.1 or more.	Number of days.			Prevailing wind direction.
									Clear.	Partly cloudy.	Cloudy.	
Minnesota.....	31.6	+4.3	15.1	0.42	-1.23	0.63	2.3	3	13	9	8	w.
Wisconsin.....	36.4	+2.4	13.0	1.41	-0.53	1.60	3.5	4	13	7	10	sw.
Illinois.....	42.6	+3.6	13.2	1.84	-0.39	1.13	0.3	5	14	6	10	sw.
Indiana.....	41.6	+1.8	15.2	2.30	-0.23	1.49	0.8	6	12	7	11	sw.
Upper Michigan.....	33.7	+1.8	11.4	1.63	-0.87	1.57	10.2	8	8	7	15	n.w.
Lower Michigan.....	38.6	+1.6	12.4	2.99	+0.46	2.40	5.5	8	9	8	13	sw.
Ohio.....	41.8	+1.9	14.0	1.27	-1.43	1.11	1.1	6	12	7	11	sw.
Pennsylvania.....	43.7	+2.6	11.0	2.17	-1.44	0.83	15.3	12	4	4	22	sw.
New York.....	39.3	+3.0	12.8	3.47	+0.72	2.12	11.4	12	8	9	13	sw.
Vermont.....	36.9	+2.8	15.3	3.57	+0.47	1.87	6.9	11	7	8	15	s.

TEMPERATURE.

As was the case with the two months immediately preceding, the mean temperature was above normal in all portions of the district. The departures ranged between $+1^{\circ}$ and $+2^{\circ}$ over the middle sections, increasing eastward to about $+3^{\circ}$ in the Champlain Valley, and westward to somewhat over $+4^{\circ}$ in the region of western Lake Superior. As a rule the mean daily range was quite small, being generally less than 15° , and the extremes were not exceptional in any section. The absolute range for the district as a whole was 84° , from a maximum of 76° at North Royalton, Ohio, to a minimum of -8° at Watersmeet, Mich.

The first few days of the month were cool, but on the 4th warm weather set in and continued generally until the 14th. This warm period culminated on the 6th over the eastern and on the 11th over the central and western portions of the district, when daily mean temperatures rose to values about 15° above the seasonal averages. A brief cool period occurred on the 13-17th, but was followed immediately by higher temperatures which lasted until the 25th. On this date the third cool spell became general, the lowest temperatures of the month being experienced in all portions of the Lake Region on the 28th or 29th. On the 30th, however, the weather moderated, and the month closed with pleasant temperatures throughout the district.

PRECIPITATION.

Precipitation was irregularly distributed, being above normal over the highlands of New York, the Vermont section, and much of the Lower Michigan Peninsula, and deficient elsewhere throughout the Lake Region. To the west of Lake Superior the month was the driest November on record, while in the lower Champlain Valley and in portions of the upper St. Lawrence Valley precipitation was abundant, and in several places approached or exceeded all previous records for the period. Even in neighboring localities there was a wide variance in the amounts of precipitation received during the month: In Minnesota the range in inches was from 0.06 at Two Harbors to 0.71 at Cloquet; in Wisconsin, from 0.15 at Superior to 3.65 at Plum Island; in Lower Michigan, from 0.92 at Traverse City to 6.22 at Harrisville; and in New York, from 0.76 at Avon to 6.50 at Canton. In point of time, precipitation was more or less general on the 1st, 5-8th, 12-14th, and 23d-28th.

Snow.—Except for a few instances, generally of inconsiderable amounts, the snowfall of the month was confined to the precipitation period of the last decade, and while the monthly totals were for the most part less than the normal for November, there were several notable exceptions. On the 13-14th heavy falls of snow occurred over the northern portion of Lower Michigan, and in the higher lands of this portion of the State the amounts reached from 10 to 12 inches for the month. Over the eastern sections of the district the falls of the last week brought the total up to considerably more than the usual amount, and in some localities exceeded all records for several years. At Canton, N. Y., 16.8 inches of snow fell during the 12 hours ending at 8 a. m. of the 27th, at which time there were 23.8 inches on the ground, the greatest depth measured at that station for more than 7 years.

Rivers.—Moderately heavy showers during the first half of the month caused a general rise in the Saginaw

and Grand watersheds, and until the 17th river conditions in these basins were quite threatening.

STORMS AND HIGH WINDS.

The maximum wind velocities of the month occurred on the 1st over the eastern sections, on the 13-14th over southeastern Michigan and northwestern Ohio, and on the 23d-24th over the Lake Michigan and northern Lake Huron sections. In the Lake Superior district the highest winds of the month at the various stations were not confined to any particular date, and a few stations elsewhere reported the highest velocities on the 8-9th.

The following reports of storms and damage have been received:

Alpena, Mich.—There were two storms of great severity. The first began on the 12th and lasted until the 14th, the wind reaching a velocity of 38 miles per hour on the 13th. The gale was accompanied by heavy snow after 11 a. m. of the 13th. At Thunder Bay Island, Mich., the board walk leading to the watch house was swept away by heavy seas, and the entire northern end of the island was inundated. Great damage to the nets of local fishermen resulted from the storm, estimated to reach at least \$15,000. The waters of the lake were deeply stirred, and had a milky appearance at Thunder Bay Island. The liner *City of Mackinac* left Cheboygan on the morning of the 13th, and reached Alpena after a rough trip of 13 hours. She was badly battered by the waves, a large hole being stove in her quarter-deck, the beams of her main deck sprung, and a number of windows broken. Some damage or delay was reported by other vessels also, and 40 craft took refuge in Thunder Bay during the storm.

The other storm occurred on the 23d and 24th, the maximum wind velocity being 42 miles from the east on the 23d. While riding out the storm at anchor the schooner *Robert C. Went* lost her deck load of 2,000 feet of lumber.

Cleveland, Ohio.—On the 9th, during the high westerly wind, the barge *Chattanooga*, in tow of the steamer *Frontenac*, was forced to heave to about 3 miles east of the harbor entrance. The barge, after a hard struggle with the high wind and heavy sea, was rescued and brought safely to harbor.

MISCELLANEOUS.

Aurora.—A well-defined aurora was observed at Berne, Ind., on the night of November 14.

Thunderstorms.—A few thunderstorms were reported in the southern portions of the district during the course of the month. At Buffalo, the unusual phenomenon of thunder and lightning during a snowstorm was observed on the afternoon of the 26th.

Ice and navigation.—In ponds and small lakes in the vicinity of extreme western Lake Superior the ice was thick enough for skating during the greater portion of the month after the 3d. On the Great Lakes, however, while some ice was reported from the northern sections during the last part of the month, it was thin and offered no hindrance to navigation. Some lines of barges began to go into winter quarters after the 14th, but otherwise the passage of vessels continued throughout the month.

NOVEMBER, 1912, LAKE LEVELS.

The following data are from the report of the United States Lake Survey:

	Lake Superior.	Lakes Michigan and Huron.	Lake Erie.	Lake Ontario.
Above tidewater at New York.....	Feet. 602.38	Feet. 580.43	Feet. 571.90	Feet. 246.08
Above or below:				
Stage of October, 1912.....	-0.21	-0.07	-0.22	-0.09
Stage of November, 1911.....	+0.35	+1.05	+0.77	+1.58
Mean of stage November last ten years..	-0.22	+0.08	+0.07	+0.51
Highest recorded stage.....	-1.13	-2.49	-1.77	+1.74
Lowest recorded stage.....	+0.88	+1.25	+1.20	+2.67
Probable change during December.....	-0.20	-0.20	-0.10	-0.20

TABLE 1.—*Climatological data for November, 1912. District No. 4, Lake Region.*

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.				Observers.	
				Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall unmeted.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Prevailing wind direction.			
<i>Minnesota.</i>																					
Cloquet.....	Carlton.	800	1	30.4	.....	58	10	- 6	28	41	0.71	.....	0.55	3.7	4	14	6	10	nw.	W. H. Kenety.
Duluth.....	St. Louis.	1,133	41	32.0	+ 2.7	58	10	- 6	27	26	0.21	- 1.37	0.16	1.8	4	6	14	10	w.	U. S. Weather Bureau.	
Floodwood.....	do.	1,257	6	.....	.....	.....	.....	.....	.....	.....	0.63	.....	0.63	3.0	1	20	0	0	.....	M. H. Schüssler.
Stephens Mine.....	do.	1,500	5	30.5	.....	57	10	5	28	37	0.49	.....	0.23	2.7	20	4	6	.....	Oliver Iron Mining Co.	
Two Harbors.....	Lake.	614	18	34.2	+ 3.6	58	10	3	28	32	0.06	- 1.53	0.06	0.6	1	5	22	3	w.	G. W. Watts.	
Virginia.....	St. Louis.	1,434	18	30.8	+ 6.5	56	10	- 2	28	33	0.40	- 0.78	0.25	2.0	3	12	8	10	nw.	Oliver Iron Mining Co.	
<i>Wisconsin.</i>																					
Appleton.....	Outagamie.	795	11	36.9	+ 1.3	62	11	16	28	22	1.24	- 0.51	0.76	2.0	6	21	1	8	s.	Wm. O. Thiede.	
Ashland.....	Ashland.	615	21	35.4	+ 3.7	62	10	13	25	41	0.71	- 0.82	0.45	3.5	5	16	5	9	w.	Sam Wheeler.	
Bayfield.....	Bayfield.	635	3	35.2*	.....	58*	11	13*	28	30*	0.20	.....	2.0	2	13*	(*)	10*	7	nw.	F. Kern.
Cecil.....	Shawano.	804	14	36.5	+ 4.7	60	11	12	28	30	1.58	- 0.03	0.88	5.0	5	15	9	6	sw.	Louis W. Schmidt.	
Cornucopia.....	Bayfield.	640	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Reed Fruit Co.	
Crandon.....	Forest.	1,060	17	32.0	+ 3.2	56	10	4	28	27	.....	.....	.....	.....	.....	13	4	13	nw.	Frank Shoemaker.
Florence.....	Florence.	1,293	21	31.5	+ 1.6	58	10	6	28	33	0.80	- 1.31	0.26	5.0	5	13*	2*	14*	nw.	Fred S. Evans.	
Fond du Lac.....	Fond du Lac.	800	26	37.4	+ 3.5	64	11	15	28	30	1.95	+ 0.24	0.88	3.5	6	19	5	6	s.	Edward A. Seeley.	
Grand River Locks.....	Marquette.	770	16	37.0	.....	64	11	12	28	32	1.01	- 0.75	0.73	T.	4	19	4	7	nw.	Jerry Parkinson.
Green Bay.....	Brown.	617	26	37.2	+ 4.7	62	11	19	28	23	1.15	- 0.81	0.72	1.0	5	4	10	16	s.	U. S. Weather Bureau.	
High Falls.....	Marquette.	1,125	0	33.6	.....	60	5	12	30†	33	1.33	.....	0.90	3.5	4	19	3	8	sw.	No. Hydro-Elec. Pow. Co.
Iron River.....	Bayfield.	1,096	3	33.8	.....	61	10	5	28	39	1.20	.....	0.30	10.0	5	17	2	11	s.	Winfield E. Tripp.
Kewaunee.....	Kewaunee.	590	3	36.6	.....	62	11	16	28	21	2.65	.....	1.60	4.5	4	14	4	12	w.	Eugene V. Kimball.
Manitowoc.....	Manitowoc.	616	61	38.2	+ 2.4	63	11	18	28	24	1.60	- 0.45	1.36	3.0	3	10	8	12	nw.	Miss Johanna Lups.	
Menasha.....	Winnebago.	764	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Geo. T. Allanson.	
Monomonee Falls.....	Waukesha.	842	3	37.4	.....	65	11	17	28	27	1.35	.....	0.36	0.6	5	15	10	5	sw.	Arthur H. Christman.
Milwaukee.....	Milwaukee.	681	42	40.0	+ 3.9	67	11	22	28	21	1.65	- 0.33	0.78	0.7	6	10	8	12	sw.	U. S. Weather Bureau.	
New London.....	Outagamie.	762	16	36.2	+ 2.1	62	11	13	28	21	1.08	- 0.72	0.80	T.	2	9	7	14	nw.	August H. Pape.	
Oconto.....	Oconto.	590	21	36.1	+ 1.8	61	11	14	28	21	1.12	- 0.95	0.97	3.0	2	10	16	4	sw.	Wm. K. Smith.	
Oshkosh.....	Winnebago.	744	23	36.2	+ 1.5	63	11	10	28	28	0.94	- 0.71	0.47	1.0	3	16	12	2	sw.	Evan Vincent.	
Pine River.....	Waushara.	900	17	37.3	+ 3.2	66	11	11	28	31	1.10	- 0.52	0.68	1.5	4	7	16	7	sw.	Geo. H. Carpenter.	
Plum Island.....	Door.	588	4	39.2	.....	56	11	20	28	30	3.65	.....	1.30	T.	6	7	5	9	sw.	Wm. Robinson.
Plymouth.....	Sheboygan.	843	2	37.0	.....	64	11	11	28	29	1.57	.....	0.97	4.2	6	16	5	9	sw.	Paul O. Feldrappe.
Port Washington.....	Ozaukee.	713	19	38.1	+ 2.0	65	11	18	28	27	1.63	- 0.33	1.10	1.5	4	9	4	17	se.	Richard C. Kann.	
Racine.....	Racine.	633	15	40.5	+ 0.8	69	11	20	28	33	1.71	- 0.20	0.82	0.4	6	14	2	14	sw.	Daniel Davis.	
Ripon.....	Fond du Lac.	1,031	2	37.2	.....	63	11	16	28	29	1.57	.....	1.03	0.5	3	12	8	10	nw.	Ripon College.
Sheboygan.....	Sheboygan.	831	13	38.1	+ 0.2	65	11	17	28	22	1.56	- 0.30	1.08	2.0	3	10	7	13	sw.	Louis C. Meyer.	
Sturgeon Bay.....	Door.	600	13	36.3	+ 1.2	62	11	15	28	24	3.06	.....	1.32	7.0	5	8	12	10	s.	Adam N. Dier.
Superior.....	Douglas.	701	3	32.4	.....	56	10	7	28	29	0.15	.....	0.10	1.0	3	11	8	11	sw.	Edward B. Banks.
Waupaca.....	Waupaca.	857	17	35.3	+ 1.7	64	11†	11	28	36	1.11	- 0.60	0.48	1.0	6	15	8	7	sw.	James H. Flagg.	
<i>Illinois.</i>																					
Chicago.....	Cook.	823	42	42.8	+ 3.6	70	11	25	28	20	1.45	- 1.05	0.77	0.4	7	12	10	8	sw.	U. S. Weather Bureau.	
Evanston.....	do.	601	.....	42.5	.....	71	11	21	28	29	2.06	+ 0.17	0.91	T.	5	17	3	10	.....	City of Evanston.
<i>Indiana.</i>																					
Auburn.....	Dekalb.	874	16	41.0	+ 2.3	73	11	17	28	37	2.86	+ 0.49	1.39	.....	4	10*	5*	12*	sw.	Mrs. Josie B. Kuhlman.
Berne.....	Adams.	849	3	42.0	.....	72	12	18	29	29	1.27	.....	0.63	0.2	7	13	10	7	sw.	Henry M. Reusser.
Elkhart.....	Elkhart.	801	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Dr. Miles Medical Co.	
Fort Wayne.....	Allen.	856	16	41.8	+ 1.2	71	11	20	28	26	1.23	- 1.71	1.00	0.5	8	12	4	14	sw.	U. S. Weather Bureau.	
Hammond.....	Lake.	593	21	41.2	+ 2.0	71	11	18	28	38	2.69	+ 0.38	1.10	0.5	7	8	10	12	.....	Carson W. Whitney.
Howe.....	Lagrange.	886	7	42.4	75	21	12	28	37	2.84	1.10	1.0	6	8	16	0	12	James E. Zook.
Note Dame.....	St. Joseph.	712	1	40.8	.....	69	11	23	28	24	2.74	.....	1.00	1.0	8	6	15	9	sw.	U. S. Weather Bureau.
Whiting.....	Lake.	606	3	42.0	.....	70	11	22	28	27	2.50	.....	1.49	1.5	6	7	1	5	sw.	D. H. Boyd.
<i>Michigan—Upper Peninsula.</i>																					
Baraga.....	Baraga.	623	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	D., S. S. & A. Ry.	
Bergland.....	Ontonagon.	1,300	2	33.3*	.....	62*	10	0	28	36*	0.87	.....	0.30	6.2	4	7*	2*	20*	sw.	Frank McMonigal.
Calumet.....	Houghton.	1,246	24	32.6	+ 2.0	53	20	12	28	30	1.80	- 0.93	0.87	12.0	10	9	4	17	w.	E. S. Grierson.	
Chatham.....	Alger.	875	11	32.6	+ 0.4	56	10†	- 2	29	40	2.14	- 1.02	0.60	25.0	6	15	8	7	n.	U. P. Experiment Station.	
Deer Park.....	Luce.	610	11	34.6	+ 0.9	58	10	10	28	28	0.85	- 1.51	0.40	7.0	3	7	1	2	nw.	Mrs. Sarah E. McGraw.	
Detour.....	Chippewa.	585	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Winthrop S. Dredick.	
Eagle Harbor.....	Keweenaw.	622	13	36.3	+ 0.3	55	20	18	28	22	1.10	- 1.56	0.50	2.5	9	8	1	21	s.	John Nolen.	
Escanaba.....	Delta.	612	39	34.7	+ 3.0	53	5	13	28	25	0.76	- 1.50	0.33	2.1	7	7	9	14	nw.	U. S. Weather Bureau.	
Ewen.....	Ontonagon.	1,147	11	32.8	+ 3.3	61	10†	- 1	28	40	1.24	- 1.15	0.31	11.0	7	7	1	22	nw.	W. B. Hatfield.	
Grand Marais.....	Alger.	610	11	36.8	+ 1.4	66	3	19	28	37	3.07	+ 0.62	1.00	13.0	12	8	2	21	nw.	Mrs. Lena Truedell.	
Green.....	Ontonagon.	622	1	35.2	.....	57	1	20	29	17	.....	.....	.....	.....	.....	16	6	8	n.	T. A. Green.
Houghton.....	Houghton.	663	11	34.3	+ 2.7	55	10	13	28	35	1.64	- 1.16	0.82	13.2	9	3	11	16	nw.	U. S. Weather Bureau.	
Humboldt.....	Delta.	6	32.3	.....	54	7†	- 2	28	37	2.94	.....	1.08	18.0	6	10	6	14	s.	D., S. S. & A. Ry.	
Marquette.....	Marquette.	734	41	35.8	+ 3.9	63	10	14	28	37	1.25	- 1.54	0.50	8.3	1						

TABLE 1.—Climatological data for November, 1912. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Sky.	Prevailing wind direction.	Observers.		
				Mean.	Departure from the normal.			Highest.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.			Greatest in 24 hours.	Total snowfall, unmeasured.	Number of rainy days, 0.01 inch or more.		
					Highest.	Lowest.	Date.						Total.	Departure from the normal.	Greatest in 24 hours.		Total snowfall, unmeasured.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.
<i>Michigan—Lower Peninsula.</i>																				
Adrian.....	Lenawee.....	770	34	40.8	+ 1.9	70	11	14	28	28	2.11	- 1.16	1.20	0.5	4	11	9	10	sw.	H. E. Hubbard.
Allegan.....	Allegan.....	698	21	39.5	+ 0.2	65	11	18	15	27	2.49	- 0.27	1.70	0.8	9	8	8	14	w.	Pere Marquette R. R.
Alma.....	Gratiot.....	750	25	37.8	+ 0.2	65	11	13	28	24	3.22	+ 0.66	1.54	1.0	10	8	5	11	sw.	P. M. Smith.
Alpena.....	Alpena.....	609	39	35.2	+ 1.5	60	11	13	28	24	3.22	+ 0.66	1.17	1.27	13	2	11	17	sw.	U. S. Weather Bureau.
Ann Arbor.....	Washtenaw.....	930	32	39.8	+ 2.7	67	11	20	28	25	2.23	- 0.30	1.00	1.0	6	11	2	17	w.	University of Michigan.
Arbela.....	Tuscola.....	728	16	37.7	- 0.2	67	12	16	29	23	3.63	+ 0.87	1.26	7.5	7	0	22	8	nw.	Wm. Atkin.
Battle Creek.....	Calhoun.....	822	25	40.0	+ 1.7	68	11	18	28	25	3.56	+ 1.12	1.10	6.0	7	9	6	15	nw.	Elmer E. Sager.
Bay City.....	Bay.....	593	16	39.5	+ 2.5														sw.	Pere Marquette R. R.
Benzonia.....	Benzonia.....	832	15	36.4	+ 1.0	60	11	18	16	22	2.41	- 0.78	0.68	17.2	10	7	10	13	sw.	Wallace Nutting.
Berlin.....	St. Clair.....	23	38.1	+ 1.7	65	11	18	28	28	2.84	+ 0.19	1.51	1.0	6	5	6	9	15	nw.	R. O. Gould.
Big Rapids.....	Mecosta.....	906	16	37.8	+ 2.8	63	11	11	28	31	2.48	- 0.26	1.20		5	4	18	9	sw.	Supt. waterworks.
Blissfield.....	Lenawee.....	687	0	40.8		69	11	13	29	26	1.62		1.00	T.	4	11	6	13	se.	Harry Watson.
Bloomingdale.....	Van Buren.....	8	40.4		70	12	22	30	26	4.01		1.06	7.0	9	13	6	11	sw.	John M. Haven.	
Cadillac.....	Wexford.....	1,293	3	35.2		59	11	8	28	22	2.92		1.36	6.5	11	10	8	12	sw.	Cadillac Water & Light Co.
Cassopolis.....	Cass.....	903	11																w.	Michigan Central R. R.
Charlevoix.....	Charlevoix.....	610	34	38.4	+ 1.6	62	10	15	28	28	1.45	- 1.09	1.02	2.0	4	9	5	16	nw.	Pere Marquette R. R.
Charlotte.....	Eaton.....	8	39.8		75	12	21	27	29	2.90		2.00	2.0	5	10	5	15	sw.	City of Charlotte.	
Cheboygan.....	Cheboygan.....	611	22	34.8	0	60	11	15	16†	30	1.93	- 0.69	1.50	10.0	4	6	16	8	sw.	E. A. Bouchard.
Clinton.....	Clinton.....	830	23	41.5	+ 3.7	70	13	19	28	29	3.22	+ 0.76	1.08	0.5	3	6	10	14	sw.	David Woodward.
Coldwater.....	Branch.....	984	15	41.2	+ 2.9	69	11	14	28	27	3.58	+ 0.38	1.23	2.5	7	10	6	14	sw.	L. S. & M. S. R. R.
Concord.....	Jackson.....	7	39.0		65 ^a	11	11	28	30	1.93	- 0.23	0.80	2.0	4	11	14*	4*	sw.	W. N. Armstrong.	
Croton.....	Newaygo.....	685	4	38.7		63	11	10	28	29	3.37		0.80	7.0	8	4	15	11	nw.	Grand Rapids Muskegon Power Co.
Detroit.....	Wayne.....	730	41	40.4	+ 1.4	65	11	22	28	21	1.80	- 0.83	1.08	0.1	9	7	8	15	w.	U. S. Weather Bureau.
Durand.....	Shiawassee.....	799	4	40.3 ^c		68 ^a	10	18 ^a	28	32 ^a					8	8	10	12	nw.	H. J. Tobin.
East Tawas.....	Isco.....	590	15	37.0	+ 1.1	60	11	28	29	3.95	+ 1.99	1.20			9	6	11	13	sw.	Detroit & Mackinaw Ry.
Eloise.....	Wayne.....	640	15	40.8	+ 2.4	66	11	20	28	27	2.23	+ 0.33	0.97	0.1	9	6	11	13	sw.	John Gilmore.
Flint.....	Genesee.....	730	23	39.3	+ 3.4	68	11	19	28	29	3.22	+ 0.76	1.08	0.5	3	6	10	14	w.	William L. Fisher.
Frankfort.....	Benzie.....	589	8	39.5		58	10†	21	28	18	3.20		1.20	13.0	7				s.	Geo. Morency.
Ganges.....	Allegan.....	665	3	41.0		64	11†	12	28	27	4.18		1.25	2.5	11	3	7	21	sw.	H. H. Hutchins.
Gaylord.....	Otsego.....	1,367	12	33.0	+ 1.1	61	11	6	28	37	4.22	+ 0.61	1.24	14.0	11	11	0	19	sw.	Michigan Central R. R.
Grand Haven.....	Gladwin.....	794	16	37.8 ^b	+ 2.6	65 ^b	11	16 ^b	28	33 ^b					18	4	8	15	w.	Geo. R. Smith.
Grand Rapids.....	Ottawa.....	628	31	40.4	+ 2.4	61	12	24	28	20	2.97	+ 0.44	1.31	2.0	14	7	8	15	w.	U. S. Weather Bureau.
Kent.....	Kent.....	707	23	40.5	+ 2.4	67	11	25	28	25	2.69	+ 0.16	1.14	7.1	10	7	9	14	s.	Joseph W. Morris.
Grape.....	Monroe.....	625	22	40.8	+ 1.8	69	11	13	28	27	1.94	- 0.59	1.04	T.	6	9	9	12	w.	Menzo Conklin.
Grass Lake.....	Jackson.....	989	6	39.6		66	12	22	16	30	3.05		1.60	2.0	4	12	3	15	sw.	S. N. Insley.
Grayling.....	Crawford.....	1,147	22	34.5	+ 0.1	63	11	1	28	36	4.55	+ 1.76	1.95	15.8	9	9	5	16	w.	Michigan Pickle Co.
Greenville.....	Montcalm.....	802	0	39.2 ^a		67 ^a	10	22 ^a	29	30 ^a					12	4	13	13	sw.	Pere Marquette R. R.
Harbor Beach.....	Huron.....	635	24	40.6	+ 3.4	65	6	17	28	36	3.75	+ 1.60	1.20	1.5	7	14	3	13	sw.	Do.
Harrison.....	Clare.....	1,159	19	37.2	+ 3.8	63	11	11	28	26	2.74	+ 0.39	1.36		4	13	6	11	sw.	D. W. Mitchell.
Harrisville.....	Alcona.....	616	28	36.2	+ 1.3	63	11	11	28	26	6.22	+ 3.60	1.81	6.5	10	5	10	15	nw.	Pere Marquette R. R.
Hart.....	Oceana.....	688	20	36.7	- 1.3	56	6	26	19 ^a	24	2.50	+ 0.18	1.60	1.60	3	4	8	18	sw.	C. F. Leipprandt.
Huron.....	620	22	37.9	- 0.5	60	12	21	16 ^a	28	3.57	+ 1.66	1.11	3.0	7	8	8	14	sw.	A. D. De Garmo.	
Highland.....	Oakland.....	1,006	20	39.4	+ 2.0	68	11	17	28	26	3.91	+ 0.96	2.20	3.4	13	7	11	12	sw.	C. L. Herron.
Hillsdale.....	Hillsdale.....	1,150	15	39.4	+ 2.0	68	11	17	28	26	3.91	+ 0.96	2.20	3.4	12	4	14	14	sw.	City of Holland.
Holland.....	Ottawa.....	610	6	41.2		66	11	22	28	26	2.69		0.91	1.6	10	15	5	10	sw.	Frank Sharp.
Howell.....	Livingston.....	924	20	39.8 ^a	+ 3.2	62 ^a	11†	16 ^a	26	30 ^a	3.06	+ 0.78	1.40	0.6	8	13	10	7	sw.	O. L. Giddings.
Ivan.....	Kalkaska.....	23	35.0	+ 1.5	63	11	9	15	28	2.49	- 0.21	0.60	14.3	13	7	11	12	sw.	City of Jackson.	
Jackson.....	Jackson.....	927	15	40.4	+ 2.1	68	11	16	28	26	2.87	+ 0.55	1.58	1.5	7	16	6	8	sw.	Kalamazoo Asylum.
Jeddo.....	St. Clair.....	667	23	38.6	+ 1.9	63	11	19	28	27	2.81	+ 0.33	1.00	0.2	8	7	11	12	w.	U. S. Weather Bureau.
Kalamazoo.....	Kalamazoo.....	955	36	39.5	+ 1.9	69	11	16	28	30	3.45	+ 0.64	1.50	9.0	5	9	9	12	sw.	State Board of Health.
Lansing (Agr. College), Lansing (capital).....	Ingham.....	820	48	38.6	+ 1.8	67	11	19	28	29	2.86	+ 0.45	1.17	6.2	11	9	5	16	sw.	Michigan Home.
Lapeer.....	Eaton.....	881	25	39.6	+ 2.5	68	11	22	29	26	4.18	+ 1.62	1.25	7.6	11	10	3	17	sw.	Pere Marquette R. R.
Ludington.....	Mason.....	588	14	39.2	+ 1.4	56	10	21	28	21	2.75	+ 0.71	1.29	6.8	10	5	7	18	s.	John W. Nichoson.
Luther.....	Lake.....	1,028	2	36.8		62	11	11	15	27	3.22		1.30	9.5	14	10	3	17	sw.	Grand Rapids & Indiana Ry.
Mackinaw.....	Mackinaw.....	592	21	34.4	- 1.3	59	12	18	15	39									s.	Do.
Mancelona.....	Antrim.....	1,121	16	33.8 ^b	- 0.9	62 ^a	11	10 ^a	30	26 ^a	5.70	+ 2.84	2.00	32.0	10	13	5	12	w.	Pere Marquette R. R.
Manistee.....	Marshall.....	600	15	38.8	+ 2.1	63	12†	18	28	33					4.0	5	17	8	sw.	E. B. Stuart.
Marshall.....	Calhoun.....	896	0	42.8 ^a		69 ^a	12	20	29	27									w.	Pere Marquette R. R.
Midland.....	604	13	38.7	+ 1.8	65	11†	19	28	38	2.50	+ 1.00	1.00	5.0	6	10	2	18	n.	George J. Tripp.	
Morenci.....	Lenswee.....	811	5	41.0		70	11	17	28	30	2.12		1.39	0.8	5	15	1	14	w.	Waterworks.
Mount Clemens.....	Macomb.....	615	12	40.4	+ 1.5	67	11	19	28	29	2.45	+ 0.10	1.20	2.5	6	12	1	17	w.	Pere Marquette R. R.
Mount Pleasant.....	Isabella.....	826	13	34.8	- 1.4															

TABLE 1.—Climatological data for November, 1912. District No. 4—Continued.

Stations.	Counties.	Elevation, feet.	Length of record, years.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.						Number of rainy days, 0.01 inch or more.	Number of clear days.	Number of partly cloudy days.	Number of overcast days.	Prevailing wind direction.	Observers.						
				Mean.	Departure from the normal.			Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall, unmeasured.											
					High.	Date.	Low.																				
<i>Ohio.</i>																											
Akron.....	Summit.....	1,081	25	41.7 ^b	+ 1.7	69 ^b	6	21 ^a	28	34 ^b	1.48	- 0.89	1.11	1.3	6	13	1	16	s.	Prof. C. R. Olin.							
Antwerp.....	Paulding.....	733	...	41.7	...	72	11	17	28	32	0.91	-	0.81	T.	2	19	0	11	nw.	North G. Osborn.							
Benton Ridge.....	Hancock.....	800	19	41.4	+ 1.0	70	11	17	28	28	1.16	- 1.38	0.65	0.2	6	10	7	13	sw.	J. W. Powell.							
Bowling Green.....	Wood.....	670	31	41.6	- 2.3	70	11	15	28	29	1.98	- 1.98	0.45	0.2	4	13	6	11	sw.	G. C. Housekeeper.							
Bucyrus.....	Crawford.....	1,000	18	40.8	- 1.7	70	11	15	28	38	1.25	- 1.06	0.35	2.0	6	15	5	10	sw.	Jas. R. Hopley.							
Cleveland (1).....	Cuyahoga.....	762	41	43.6	+ 3.2	68	6	26	28	42	0.89	- 1.86	0.42	1.3	12	8	7	15	s.	U. S. Weather Bureau.							
Cleveland (2).....	do.....	754	15	43.2	+ 2.7	69	6	25	28	23	1.30	- 0.81	0.47	2.0	10	11	6	13	sw.	Rev. F. L. Odenbach, S. J.							
Conneaut.....	Ashland.....	675	2	43.4	...	69	6	21	29	25	3.08	-	0.75	10.0	12	9	2	19	sw.	E. L. Ransom.							
Findlay.....	Hancock.....	776	23	41.9	+ 1.8	72	11	18	28	31	1.86	- 1.91	0.55	T.	4	16	11	3	sw.	Dr. E. A. Moser.							
Fremont.....	Sandusky.....	628	10	42.8	+ 1.8	71	11	19	28	27	1.28	- 0.87	0.67	T.	4	15	5	10	sw.	E. Stanley Thomas.							
Hedges.....	Paulding.....	725	18	39.6	+ 0.2	71	11	16	28	42	0.86	- 1.65	0.75	T.	2	9	9	12	w.	Charles Stutzman.							
Hillhouse.....	Hiram.....	997	19	42.2	+ 3.0	69	6	19	29	27	2.14	- 1.22	0.73	1.0	8	9	9	12	sw.	J. W. Doncaster.							
Hudson.....	Portage.....	1,260	32	41.0	+ 2.2	68	6	19	28	22	1.13	-	0.98	1.05	7.0	7	10	10	sw.	Prof. G. H. Colton.							
Lima.....	Summit.....	1,123	51	42.7	+ 3.1	71	7	18	29	27	1.92	-	1.13	1.10	2.0	8	13	6	11	sw.	Dr. W. I. Chamberlain.						
Medina.....	Allen.....	875	13	41.6	+ 0.2	69	11	20	28	26	1.70	- 1.35	0.45	0	2	12	11	7	sw.	Miss Ollie DeLong.							
Montpelier.....	Medina.....	944	24	41.2	+ 0.4	70	6	19	28	28	0.94	- 1.87	0.49	1.0	3	11	8	11	s.	F. W. Clark.							
Napoleon.....	Williams.....	880	20	41.5	+ 3.7	71	11	15	28	28	2.11	- 0.82	0.95	1.0	5	14	0	16	w.	C. L. Laser.							
New Bremen.....	Henry.....	680	25	41.4	+ 1.3	71	11	15	27	34	1.34	- 1.32	0.95	0	4	16	2	12	sw.	A. C. Senter.							
North Royalton.....	Auglaize.....	1,038	19	41.2	- 0.1	71	11	17	28	29	0.36	- 2.57	0.22	T.	3	18	9	3	sw.	Miss Lillian Grothaus.							
Norwalk.....	Cuyahoga.....	1,000	19	41.1	+ 1.3	76	7	18	28	34	1.19	- 1.43	0.45	2.0	5	13	10	7	sw.	W. S. Edgerton.							
Obetz.....	Huron.....	719	26	42.6	+ 2.1	71	11	19	28	27	1.26	- 1.26	0.72	T.	6	8	9	13	w.	Giles R. Gregory.							
Ottawa.....	Lorain.....	855	37	42.2	+ 2.3	70	6	19	28	30	0.89	- 1.64	0.27	T.	5	11	3	16	sw.	Prof. F. Jewett.							
Sandusky.....	Putman.....	720	19	42.0	+ 1.0	72	11	18	28	31	0.59	-	0.52	T.	4	10	10	10	sw.	Prof. J. T. Maidlow.							
Tiffin.....	Erie.....	629	35	43.0	+ 2.2	70	11	23	28	25	0.79	- 1.95	0.68	0.5	7	5	9	16	sw.	U. S. Weather Bureau.							
Toledo.....	Seneca.....	775	30	41.6	+ 1.2	67	11†	21	26	24	1.78	- 1.78	0.52	T.	4	16	8	6	sw.	Prof. T. H. Sonnedecker.							
Upper Sandusky.....	Lucas.....	769	41	42.0	+ 2.3	70	11	23	28	23	1.77	- 0.88	0.93	0.1	10	12	7	11	sw.	U. S. Weather Bureau.							
Vickery.....	Wyandot.....	857	29	41.8	+ 0.8	70	11	18	28	27	1.40	- 1.27	0.60	T.	5	9	8	13	sw.	Robert E. Tracht.							
Wapakoneta.....	Sandusky.....	588	19	41.8	+ 1.8	70	11	15	28	28	1.12	- 1.15	0.61	0.4	9	10	9	11	sw.	John W. Barr.							
Wauseon.....	Auglaize.....	898	34	40.3	...	68	11	18	28	24	0.79	-	0.37	T.	5	14	5	15	sw.	Dr. William Kayser.							
Wickliffe.....	Fulton.....	780	40	40.4	+ 3.3	70	11	18	28	29	1.61	- 1.49	0.75	0.3	10	5	15	10	sw.	Thomas. Mikesell.							
	Lake.....	740	...	...	...	...	...	...	...	1.27	...	...	0.66	1.0	8	7	4	19	w.	C. M. Richardson.
<i>Pennsylvania.</i>																											
Erie.....	Erie.....	658	39	43.7	+ 2.6	69	6	27	28	25	2.17	- 1.44	0.83	15.3	12	4	4	22	sw.	U. S. Weather Bureau.							
<i>New York.</i>																											
Adams Center.....	Jefferson.....	540	21	39.9	+ 5.2	66	6†	6	29	28	6.09	+ 2.61	1.61	24.0	17	8	8	14	sw.	A. E. Cooley.							
Angelica.....	Allegany.....	1,340	29	38.5	+ 2.5	65	6	13	28	33	2.32	- 0.06	0.78	7.5	14	3	8	19	w.	Charles P. Arnold.							
Appleton.....	Niagara.....	270	21	42.0	+ 2.5	66	6	22	28	25	2.88	- 0.50	0.80	1.8	12	6	11	13	sw.	H. A. Van Wagoner.							
Auburn.....	Cayuga.....	715	43	41.6	+ 3.2	69	6	22	28	26	2.47	+ 1.24	1.55	7.0	9	16	4	10	n.	A. H. Underwood.							
Avon.....	Livingston.....	585	17	...	...	19	28†	...	0.76	- 1.29	0.41	2.0	5	2	13	15	...	W. G. Markham.							
Blue Mountain Lake.....	Hamilton.....	1,750	12	Miss E. F. Merwin.						
Brockport.....	Monroe.....	537	16	41.4	+ 2.9	69	6	19	28†	25	2.91	+ 0.16	0.75	4.5	14	2	12	16	sw.	W. H. Lennon.							
Buffalo.....	Erie.....	767	61	42.3	+ 3.2	65	6	25	28	23	2.63	- 0.67	0.81	4.4	10	5	8	17	sw.	U. S. Weather Bureau.							
Canton.....	St. Lawrence.....	448	18	35.9	+ 2.0	64	6	28	31	30	3.00	+ 3.09	1.87	26.1	15	5	7	18	sw.	Do.							
Cape Vincent.....	Jefferson.....	246	7	40.6	...	60	6	19	28	33	4.18	-	1.35	...	10	6	3	16	n.	J. Harry Grapotte.							
Chazy.....	Clinton.....	151	12	39.0	+ 5.1	65	27	10	29	37	2.73	+ 1.21	1.50	5.0	7	6	14	10	w.	W. R. North.							
Chestnut Lawn.....	Wyoming.....	1,090	0	40.6	...	68	6	9	28	29	1.91	-	0.50	8.5	11	6	13	w.	Charles Peterson.								
Dannemora.....	Clinton.....	1,490	7	36.0	...	62	6	15	29	30	3.71	-	0.86	9.5	11	8	17	w.	Dr. W. N. Thayer.								
Ebba.....	Genesee.....	500	13	39.2	+ 1.2	67	6	13	29	25	1.49	- 0.58	0.85	3.0	4	17	9	w.	Joseph S. Wilford.								
Fayetteville.....	Onondaga.....	530	11	42.1	+ 4.2	68	6†	28	28†	36	4.08	+ 1.47	1.06	1.0	15	10	4	16	w.	Dane H. Wells.							
Gabriels.....	Franklin.....	1,729	10	33.4	...	62	6	2-	29	36	3.73	-	1.46	10.9	16	7	5	18	sw.	Gabriels Sanitarium.							
Harkness.....	Clinton.....	622	10	37.6	+ 2.8	65	6	9	29	26	3.76	+ 2.26	1.38	10.0	11	23	1	6	w.	J. W. Harkness.							
Hemlock Lake.....	Livingston.....	900	14	36.0	...	65	6†	22	28	23	1.76	+ 0.07	0.63	6.0	9	8	8	14	sw.	Bernard P. McGrady.							
Hunt.....	do.....	1,321	13	42.4	+ 3.8	72	6	8	28	28	1.33	- 0.52	0.60	2.0	6	8	7	15	sw.	W. S. Barager.							
Ithaca.....	Tompkins.....	924	34	41.8	+ 4.2	69	6	21	28	27	2.41	- 0.17	0.80	9.1	12	6	7	17	se.	U. S. Weather Bureau.							
Keene Valley.....	Essex.....	1,000	14	36.1	+ 2.2	68	6†	29	43	44	1.4	+ 1.52	0.75	9.0	10	8	8	14	s.	E. R. Wells.							
King Ferry.....	Cayuga.....	12	...	...	...	...	...	...	...	2.79	+ 0.60	0.89	6.9	8	8	3	19	nw.	Lucius A. Goodyear.	
Lake George.....	Warren.....	350	15	40.4	+ 3.4	65	12	17	29	30	4.08	+ 1.01	2.12	1.6	8	16	8	18	s.	Charles Forsell.							
Lake Placid Club.....	Essex.....	1,864	4	30.2	...	55	6	1	29	32	4.83	-	1.10	18.9	20	5	12	13	sw.	Henry van Hoevenberg.							
Lauterbrunnen.....	do.....	0	40.4	...	69	6	15	28	30	1.80	-	0.49	5.2														

TABLE 2.—*Daily precipitation for November, 1912. District 4, Lake Region.*

TABLE 2.—*Daily precipitation for November, 1912. District No. 4—Continued.*

Stations.	Watershed.	Day of month.																													Total.		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
<i>Michigan—Lower Peninsula—Con.</i>																																	
Ann Arbor.....	Huron.....	1.00	T.	..	.03	.93	.1003	T.	.04	T.	2.23		
Arbela.....	Saginaw.....	.56	..	..	..	1.26	.13	..	..	..	T.	.77	.26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.63
Battle Creek.....	Kalamazoo.....	.79	T.	..	T.	1.10	..	T.	..	..	T.	.76	T.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.56
Bay City.....	Saginaw.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Benzonia.....	Beaurey.....	.01	T.	..	T.	..	.50	.25	T.	12	.68	.32	2.41		
Berlin.....	Clinton.....	1.51	T.	15	.35	.08	T.	2.84		
Big Rapids.....	Muskegon.....	.60	..	..	..	..	.47	..	..	..	..	10	1.20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.48
Blissfield.....	Raisin.....	.63	..	..	..	1.00	..	.02	..	..	..	T.	.07	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1.62
Bloomingdale.....	Lake Michigan.....	.40	T.	..	T.	1.06	.36	T.	..	..	T.	.97	T.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4.01
Cadillac.....	Manistee.....	.26	..	..	..	..	.42	..	.12	.02	..	15	1.36	.15	.14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.92
Cassopolis.....	St. Joseph.....	..	..	..	..	..	..	..	..	..	..	42	.60	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Charlevoix.....	Lake Michigan.....	1.45		
Charlotte.....	Kalamazoo.....	..	..	..	..	..	..	2.00	.15	..	..	..	.55	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.90
Cheboygan.....	Cheboygan.....	T.	T.	..	..	..	..	..	..	..	..	1.50	.25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1.98
Clinton.....	Raisin.....	1.02	..	..	T.	..	..	1.05	.23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.35
Coldwater.....	St. Joseph.....	1.10	..	..	T.	..	..	1.23	.05	..	..	..	.47	.15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.58
Concord.....	Kalamazoo.....	..	..	..	T.	..	..	.40	..	T.	..	..	.58	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1.98
Croton.....	Muskegon.....	.02	..	..	T.	..	..	.80	T.	.05	..	..	1.46	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.37
Detroit.....	Detroit.....	.46	T.	..	..	..	..	1.05	.03	.03	..	T.	.13	.01	T.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1.80
Durand.....	Saginaw.....	..	..	..	..	..	..	.97	.12	.05	..	..	.47	.05	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
East Tawas.....	Lake Huron.....	.20	10	.90	T.	..	80	1.20	.60	T.	3.95		
Eloise.....	Rouge.....	.71	T.97	.32	.0216	.01	T.	2.23		
Flint.....	Saginaw.....	1.08	..	..	..	..	..	1.07	.25	.05	..	..	.60	.07	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.22
Frankfort.....	Beaurey.....	.10	..	..	..	..	..	..	..	..	..	70	1.20	.50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.20
Ganges.....	Lake Michigan.....	.95	..	..	..	..	..	1.19	.23	.03	..	..	1.25	.14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4.18
Gaylord.....	Cheboygan.....	.22	.12	..	..	..	..	T.	..	.14	..	..	29	1.24	.86	..	16	..	..	..	..	..	..	..	..	..	..	..	..	4.22
Gladwin.....	Saginaw.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Grand Haven.....	Grand.....	.25	T.	..	T.	1.29	..	.0983	.10	T.	2.97		
Grand Rapids.....	do.....	.10	T.	..	T.	1.14	..	.0332	.46	T.	2.69		
Grape.....	Raisin.....	.70	..	..	..	..	..	1.04	.05	T.	..	..	.13	.01	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1.94
Grass Lake.....	Grand.....	1.60	..	..	T.	..	..	1.00	..	T.	..	..	.25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.05
Grayling.....	Au Sable.....	..	..	..	..	..	..	.40	..	.37	..	..	.35	1.95	.06	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4.55
Greenville.....	Grand.....	..	..	..	..	..	..	..	..	..	..	..	..	.60	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Harbor Beach.....	Lake Huron.....	1.10	..	..	..	..	..	1.05	.15	..	..	..	1.20	.10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.75
Harrison.....	Saginaw.....	..	..	..	..	..	..	.51	..	.61	..	..	26	1.36	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.74
Harrisville.....	Lake Huron.....	.88	10	..	..	..	..	.71	..	.10	..	..	42	1.81	.87	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6.22
Hart.....	Pentwater.....	..	..	..	..	..	..	.60	.30	..	..	..	1.60	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.50
Hayes.....	Pigeon.....	.82	T.	..	T.	..	..	1.03	..	T.	..	..	13	1.11	.18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.57
Highland.....	Huron.....	1.44	..	..	..	..	..	.93	.20	.10	..	..	.01	.07	.07	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.12
Hillsdale.....	St. Joseph.....	.25	2.20	..	..	..	..	.45	.81	T.	..	..	.75	.02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.94
Holland.....	Lake Michigan.....	.60	.02	..	..	..	..	.91	..	.01	..	..	.35	.10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.69
Howell.....	Saginaw.....	1.40	..	..	T.	..	..	.95	.10	.05	..	..	.37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.06	
Ivan.....	Manistee.....	.21	15	..	..	..	..	.15	..	.14	..	..	.07	T.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.49
Jackson.....	Grand.....	1.58	T.	..	T.	..	..	.96	.10	.02	..	..	.30	.08	.07	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.87
Jeddo.....	St. Clair.....	.92	T.	..	T.	..	..	1.00	.16	.03	T.	..	.56	T.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.81
Kalamazoo.....	Kalamazoo.....	..	..	..	..	..	..	1.50	..	..	..	..	.90	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3.45
Lansing (Agricultural College).....	Grand.....	.50	..	..	..	..	..	1.02	.05	.03	..	..	.04	.59	.07	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2.86
Lansing (Capitol).....	do.....	1.25	..	..	..	..	..	.47	1.05	.01	..	..	.60	.45	.04	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4.18
Leper.....	Saginaw.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ludington.....	Pere Marquette.....	.10	T.	..	..	..	..	.07	..	..	..	..	.76	1.26	.10	..														

TABLE 2.—*Daily precipitation for November, 1912. District No. 4—Continued.*

- Precipitation included in that of the next measurement.

† Separate dates of falls not recorded.

Precipitation for the 24 hours ending on the morning when it is measured.

T. Precipitation is less than 0.01 inch rain or melted snow.

TABLE 3.—Maximum and minimum temperatures at selected stations for November, 1912. District No. 4, Lake Region.

Date.	Duluth, Minn.	Wisconsin.						Chicago, Ill.		Fort Wayne, Ind.		Upper Michigan.						Lower Michigan.										
		Florence.		Green Bay.		Milwau- kee.						Escanaba.		Ewen.		Houghton.		Mar- quette.		Sault Ste. Marie.		Alpena.		Battle Creek.		Cadillac.		
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1....	29	19	37	23	35	27	37	29	43	29	40	33	36	25	38	23	31	24	36	26	36	26	37	28	40	31	35	28
2....	32	16	32	24	36	21	37	24	38	28	35	22	38	22	32	24	35	26	31	24	35	21	35	30	31	31	24	24
3....	46	24	50	17	49	26	49	28	48	30	45	25	47	22	52	12	54	19	50	24	40	24	42	31	45	28	43	25
4....	53	27	49	34	51	40	53	37	57	40	54	36	46	36	53	34	53	40	51	39	48	38	47	36	51	35	48	35
5....	44	27	51	30	54	37	57	42	58	45	60	42	53	33	50	36	45	35	56	35	54	32	58	38	59	45	54	38
6....	41	30	41	22	45	35	51	38	56	45	58	40	44	31	48	25	41	34	41	30	45	34	51	41	54	46	51	40
7....	47	34	46	20	50	29	47	36	48	41	52	40	45	27	52	22	48	29	50	30	48	30	45	31	51	35	47	30
8....	41	30	43	33	45	39	51	40	54	41	55	38	45	36	48	26	42	32	44	34	40	32	44	30	53	33	42	34
9....	36	26	40	30	42	31	45	34	49	36	48	39	42	36	40	29	39	33	41	36	40	31	42	32	46	37	40	32
10....	58	34	58	31	56	40	61	42	65	47	65	44	49	42	61	29	55	33	63	36	48	30	51	32	60	39	53	35
11....	41	34	54	32	62	46	67	49	70	55	71	51	52	40	58	32	43	35	51	39	49	35	60	36	68	45	59	43
12....	36	30	45	32	46	38	60	41	62	49	63	54	42	33	55	30	38	34	40	36	43	32	51	37	63	52	55	39
13....	34	20	34	30	39	32	41	32	49	36	61	37	35	31	50	28	34	32	37	32	34	30	38	32	60	37	42	29
14....	37	15	32	24	37	28	37	30	41	34	39	33	32	26	48	29	32	33	28	33	19	32	25	38	31	32	23	23
15....	37	22	34	15	39	23	41	26	43	31	42	30	37	21	40	11	38	22	38	27	30	17	28	16	40	26	33	16
16....	40	23	35	22	40	31	43	32	45	35	50	27	38	28	43	26	39	31	38	33	38	21	36	15	44	25	36	23
17....	46	21	35	24	42	28	46	29	46	32	44	30	37	32	44	24	39	28	39	30	34	30	35	29	43	31	36	30
18....	52	27	36	11	48	26	53	35	54	35	53	31	43	26	49	16	49	26	49	29	36	30	38	30	45	25	41	24
19....	55	31	48	20	55	36	58	40	60	40	59	36	50	32	50	28	47	39	53	38	45	32	49	33	55	35	49	34
20....	52	37	47	30	54	37	57	42	63	43	64	38	49	35	61	29	51	33	58	37	47	29	49	30	61	36	52	30
21....	42	32	44	30	48	36	51	37	54	49	58	36	48	33	43	29	46	38	46	38	42	35	48	34	55	40	50	36
22....	40	31	43	32	46	35	52	37	53	45	52	39	47	33	35	27	41	32	45	33	40	33	46	32	50	31	42	33
23....	32	23	41	30	42	32	42	28	45	31	46	32	37	32	38	32	32	24	36	32	38	33	36	30	42	32	45	32
24....	30	20	32	25	35	28	35	28	37	28	33	26	34	28	31	20	32	27	35	28	30	24	39	29	35	28	41	26
25....	26	18	27	14	31	21	34	27	38	29	33	31	30	22	30	6	30	24	32	23	32	26	34	30	31	25	31	25
Mns..	39.5	24.4	39.4	23.6	43.6	30.7	46.5	33.5	49.4	36.2	49.4	34.2	40.8	28.6	42.9	22.7	39.7	28.9	41.7	30.0	38.5	27.4	41.6	28.9	47.0	32.9	41.6	28.9

Date.	Lower Michigan.						Ohio.						Erie, Pa.						New York.						Vermont.			
	Detroit.		Muskegon.		Saginaw, West Side.		Cleveland.		Lima.		Sandusky.		Toledo.		Buffalo.		Canton.		Rochester.		Syracuse.		Burling- ton.		Northfield.			
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		
1....	41	29	39	30	38	29	61	35	60	35	43	30	62	37	60	37	59	35	60	37	62	42	57	35	56	28		
2....	38	25	37	31	36	25	38	33	38	33	39	29	39	32	37	32	35	27	37	30	40	29	38	29	41	28		
3....	41	28	50	27	43	25	43	32	44	22	44	27	42	38	32	42	30	32	22	38	30	35	26	35	25	32	17	
4....	52	38	50	40	50	34	52	33	50	33	54	34	51	32	53	36	54	34	52	33	54	32	45	32	53	15		
5....	60	41	51	36	59	41	62	46	59	41	62	45	60	43	62	47	57	50	54	44	62	43	54	43	52	33		
6....	53	48	55	45	53	42	68	53	60	50	64	52	57	50	69	54	65	55	64	53	68	55	62	49	66	30		
7....	50	35	48	34	49	36	58	44	57	37	57	40	50	41	59	45	57	41	61	55	63	40	63	35	62	46		
8....	52	35	47	38	49	37	51	36	54	31	53	35	56	35	49	40	48	35	39	34	46	37	41	34	46	35		
9....	46	38	43	38	43	37	45	40	47	39	45	41	48	40	45	40	44	38	45	32	44	38	45	36	41	32		
10....	59	40	47	37	58	38	60	44	62	40	62	42	63	40	65	45	62	33	51	34	46	36	40	32	37	27		
11....	65	47	60	45	66	45	69	46	70	52	70	49	66	52	62	51	60	39	67	46	66	46	54	36	54	28		
12....	61	54	61	48	60	45	65	58	66	57	63	53	68	58	69	59	63	38	64	42	63	47	55	39	59	41		
13....	57	37	49	35	50	32	62	41	61	39	62	40	60	39	65	44	64	38	51	43	64	45	42	35	41	33		
14....	57	29	38	32	32	26	41	34	42	34	40	32	39	29	44	35	47	36	41	32	48	36	49	37	42	34		
15....	34	27	40	30	33	22	36	32	40	26	36	30	40	27	40	35	36	30	33	27	39	32	34	27	36	26		
16....	46																											